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Vie_setup

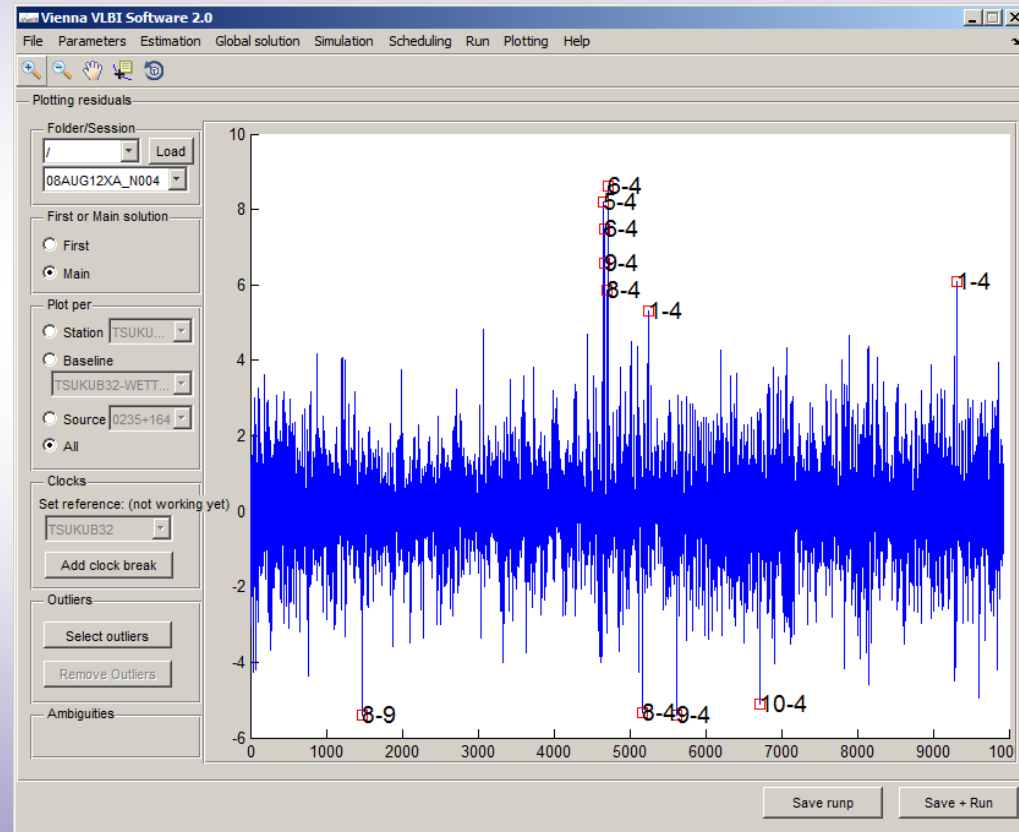
Matthias Madzak

VieVS User Workshop
9 – 10 September, 2013
Vienna






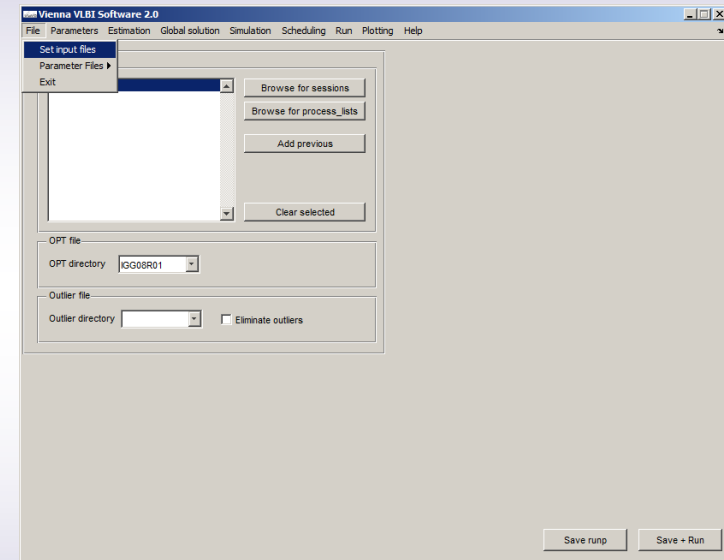
Vie_setup

-  Is GUI for Vienna VLBI Software
-  Is easy to use (windows style)
-  Comes with a plotting tool






Matlab interface

-  .m file - Code
-  .fig file – Objects
-  Starts by running .m file






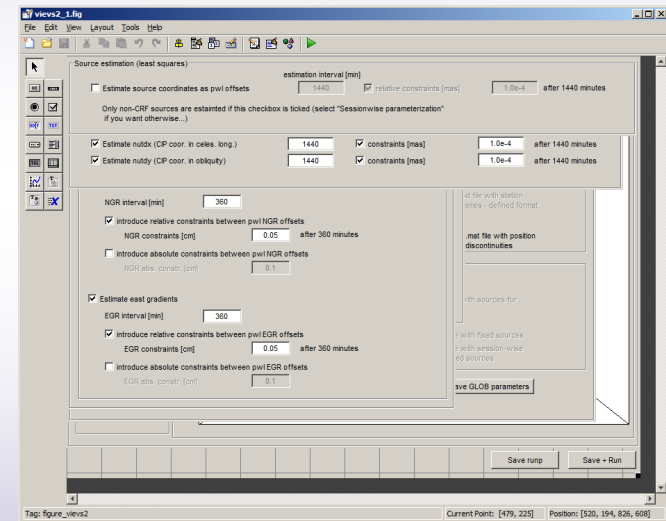
GUI .m file

-  Consists of matlab code
-  Callbacks for objects
-  Further functions possible

```
146 - dirsInGlobTrfDatum([dirsInGlobTrfDatum.isdir]==[]);
147 - dirsInGlobTrfReduce([dirsInGlobTrfReduce.isdir]==[]);
148 - dirsInGlobTrfSecont([dirsInGlobTrfSecont.isdir]==[]);
149 - dirsInGlobTrfVel([dirsInGlobTrfVel.isdir]==[]);
150 - dirsInGlobTrfVelTree([dirsInGlobTrfVelTree.isdir]==[]);
151 - dirsInGlobTrfDatum([dirsInGlobTrfDatum.isdir]==[]);
152 - dirsInGlobCrffixed([dirsInGlobCrffixed.isdir]==[]);
153 - dirsInGlobCrfReduce([dirsInGlobCrfReduce.isdir]==[]);
154
155 % set new entries for popup menu
156 - set(handles.popupmenu_setInput_optDir, 'String', (dirsInOptFolder.name))
157 - if isempty(dirsInOutlierFolder.name)
158     set(handles.popupmenu_setInput_outDir, 'String', ' ');
159 - else
160     set(handles.popupmenu_setInput_outDir, 'String', (' ', dirsInOutlierFolder.name));
161 - end
162 - set(handles.popupmenu_parameters_tropo_externalFile, 'String', (dirsInTrpFolder.name))
163 - set(handles.popupmenu_parameters_iono_ext, 'String', (dirsInIonFolder.name))
164 - if isempty(dirsInIonFolder)
165     set(handles.popupmenu_parameters_statCorr_nonTidalAtmoOceanLoad, 'String', ' ')
166 - else
167     set(handles.popupmenu_parameters_statCorr_nonTidalAtmoOceanLoad, 'String', (dirsInIonFolder.name))
168 - end
169 - set(handles.popupmenu_parameters_refFrames_otherTRF, 'String', (dirsInTrfFolder.name))
170 - if isempty(dirsInCrfFolder)
171     set(handles.popupmenu_parameters_refFrames_otherCRF, 'String', ' ')
172 - else
173     set(handles.popupmenu_parameters_refFrames_otherCRF, 'String', (dirsInCrfFolder.name))
174 - end
175 - set(handles.popupmenu_parameters_statCorr_tidalOceanLoad, 'String', (dirsInTideFolder.name))
176 - set(handles.popupmenu_parameters_statCorr_tidalAtmoOceanLoad, 'String', (dirsInAtideFolder.name))
177 - if isempty(dirsInHydroFolder)
178     set(handles.popupmenu_parameters_statCorr_hydroLoading, 'String', ' ');
179 - else
180     set(handles.popupmenu_parameters_statCorr_hydroLoading, 'String', (dirsInHydroFolder.name));
181 - end
182 - set(handles.popupmenu_parameters_sop_aPriori_other, 'String', (dirsInOpFolder.name))
183 - set(handles.popupmenu_parameters_sop_observLibMode, 'String', {'libmode' (dirsInLibMode)}, (dirsInOpFolder.name))
184 - set(handles.popupmenu_plot_folder_subfolder, 'String', ['/', (dirsInDataFolder.name)])
185 - set(handles.popupmenu_plot_folder_subfolder, 'String', ['/', (dirsInDataFolder.name)])
186 - set(handles.popupmenu_plot_folders_subfolder, 'String', ['/', (dirsInDataFolder.name)])
187 - set(handles.popupmenu_plot_resDataFolder, 'String', ['/', (dirsInDataFolder.name)])
188 - set(handles.listbox_vis_sim_paramFile, 'String', (dirsInTurbFolder.name))
```

GUI .fig file

-  All objects (panels, buttons, text, boxes,...)
-  Create/Change with GUIDE
-  Simple (code behind is more difficult)




GUI handles structure

 One variable for all content

 GUI parameters (state)

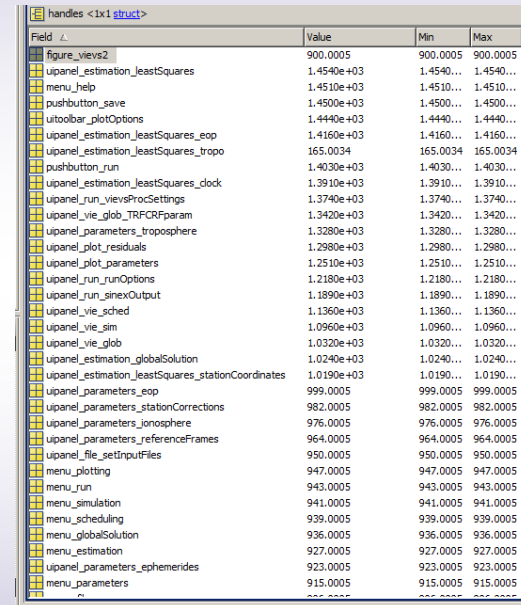
 User data

 Overgiven in functions
(function → need to be saved or returned)

 Fields are object handles



`get(handles.checkbox_run_allowStationwise, ...`

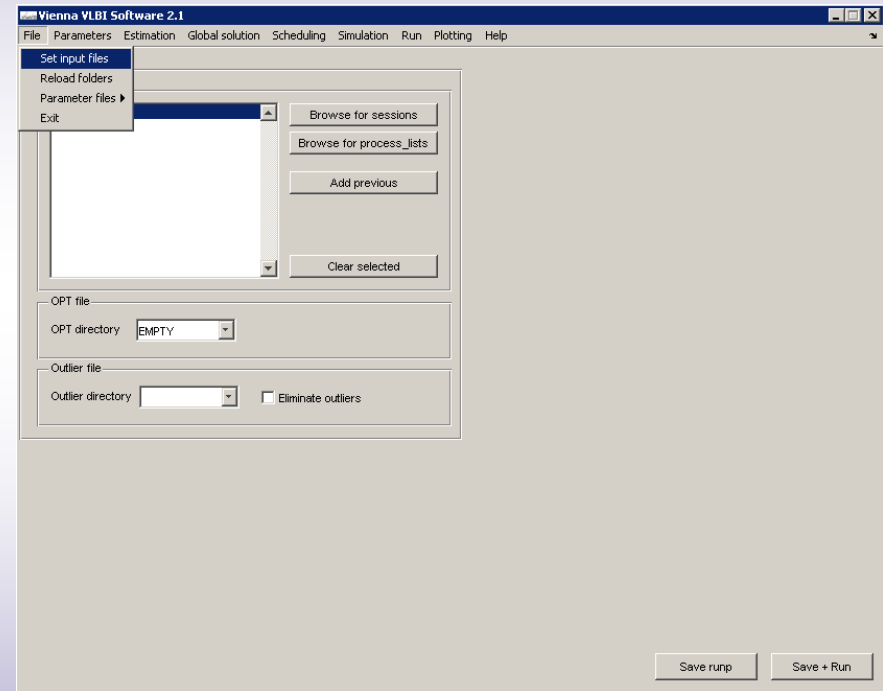
`'Value')` returns current value of checkbox (1 oder 0)








Field	Value	Min	Max
figure_viewsz	900.0005	900.0005	900.0005
upanel_estimation_leastSquares	1.4540e+03	1.4540...	1.4540...
menu_help	1.4500e+03	1.4500...	1.4500...
pushbutton_save	1.4500e+03	1.4500...	1.4500...
toolbar_plotOptions	1.4440e+03	1.4440...	1.4440...
upanel_estimation_leastSquares_eop	1.4160e+03	1.4160...	1.4160...
upanel_estimation_leastSquares_tropo	165.0034	165.0034	165.0034
pushbutton_run	1.4030e+03	1.4030...	1.4030...
upanel_estimation_leastSquares_clock	1.3910e+03	1.3910...	1.3910...
upanel_run_viewsProcSettings	1.3740e+03	1.3740...	1.3740...
upanel_vie_glob_TRFCRFParam	1.3420e+03	1.3420...	1.3420...
upanel_parameters_troposphere	1.3280e+03	1.3280...	1.3280...
upanel_plot_residuals	1.2980e+03	1.2980...	1.2980...
upanel_plot_parameters	1.2510e+03	1.2510...	1.2510...
upanel_run_runOptions	1.2180e+03	1.2180...	1.2180...
upanel_run_sinxOutput	1.1890e+03	1.1890...	1.1890...
upanel_vie_sched	1.1360e+03	1.1360...	1.1360...
upanel_vie_sim	1.0960e+03	1.0960...	1.0960...
upanel_vie_glob	1.0320e+03	1.0320...	1.0320...
upanel_estimation_globalSolution	1.0240e+03	1.0240...	1.0240...
upanel_estimation_leastSquares_stationCoordinates	1.0190e+03	1.0190...	1.0190...
upanel_parameters_eop	999.0005	999.0005	999.0005
upanel_parameters_stationCorrections	982.0005	982.0005	982.0005
upanel_parameters_troposphere	976.0005	976.0005	976.0005
upanel_parameters_referenceFrames	964.0005	964.0005	964.0005
upanel_file_getInputFiles	950.0005	950.0005	950.0005
menu_plotting	947.0005	947.0005	947.0005
menu_run	943.0005	943.0005	943.0005
menu_simulation	941.0005	941.0005	941.0005
menu_scheduling	939.0005	939.0005	939.0005
menu_globalSolution	936.0005	936.0005	936.0005
menu_estimation	927.0005	927.0005	927.0005
upanel_parameters_ephemerides	923.0005	923.0005	923.0005
menu_parameters	915.0005	915.0005	915.0005

Minimum for VieVS

-  Select session(s)
-  Click „Save + Run“



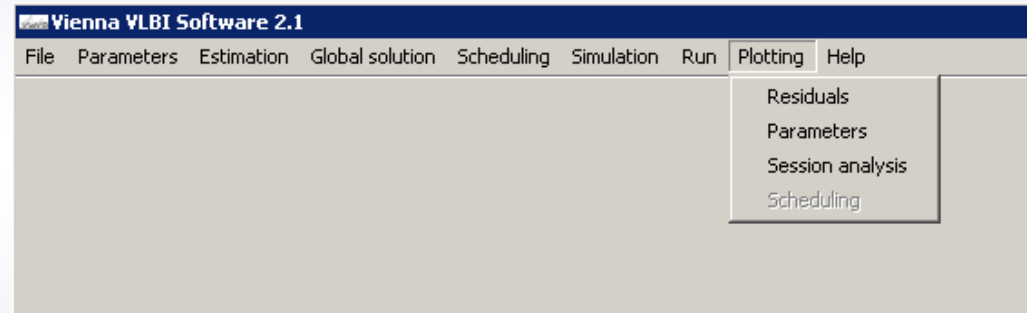
More options

-  A priori models (`vie_mod`)
-  Estimation options (`vie_lsm`)
-  Scheduling (`vie_sched`)
-  Simulation (`vie_sim`)
-  Global solution (`vie_glob`)

Plotting

In menu Plotting

- Residuals
- Parameters
- Session information



Plot residuals

 First (only clock+zwd)

→ Clock breaks

 Main solution

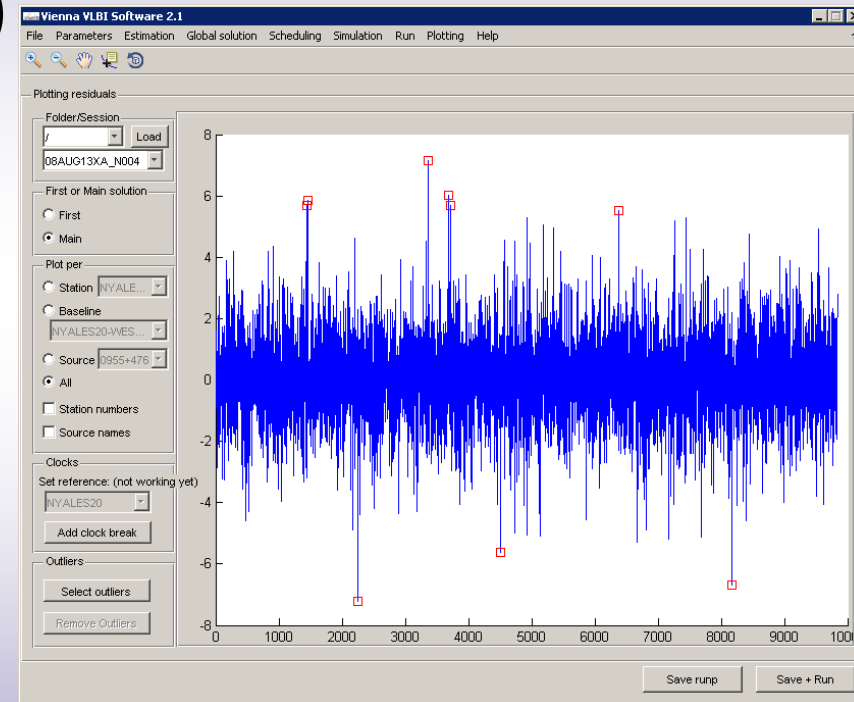
 Baseline-wise

 Station-wise






 Source-wise

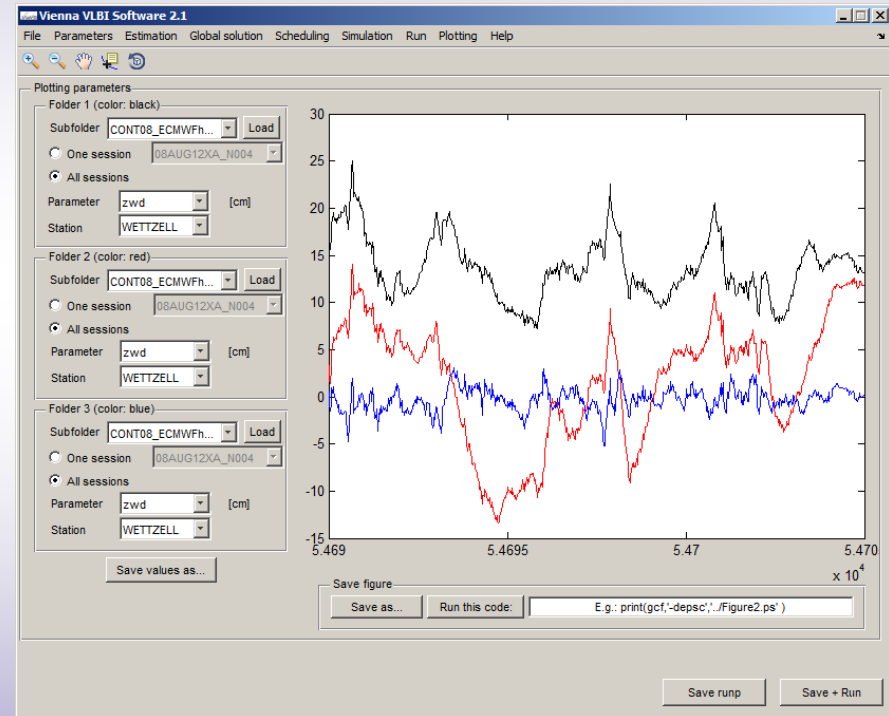
+ Clock breaks adding

+ Outlier selection






Plot parameters

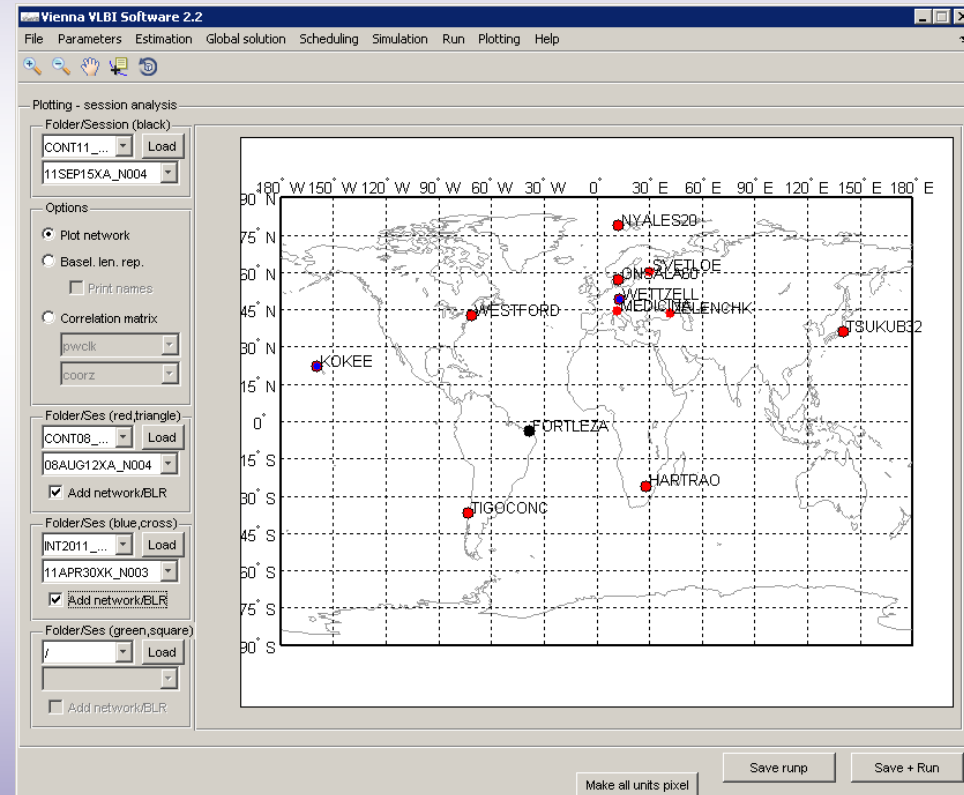
-  One/all session(s) in folder
-  Parameters per station
-  Comparison (up to three) possible
-  Save values as text
-  Print to any format






Plot session information

-  Session network*
-  Baseline length repeatabilities*
-  Correlation matrix

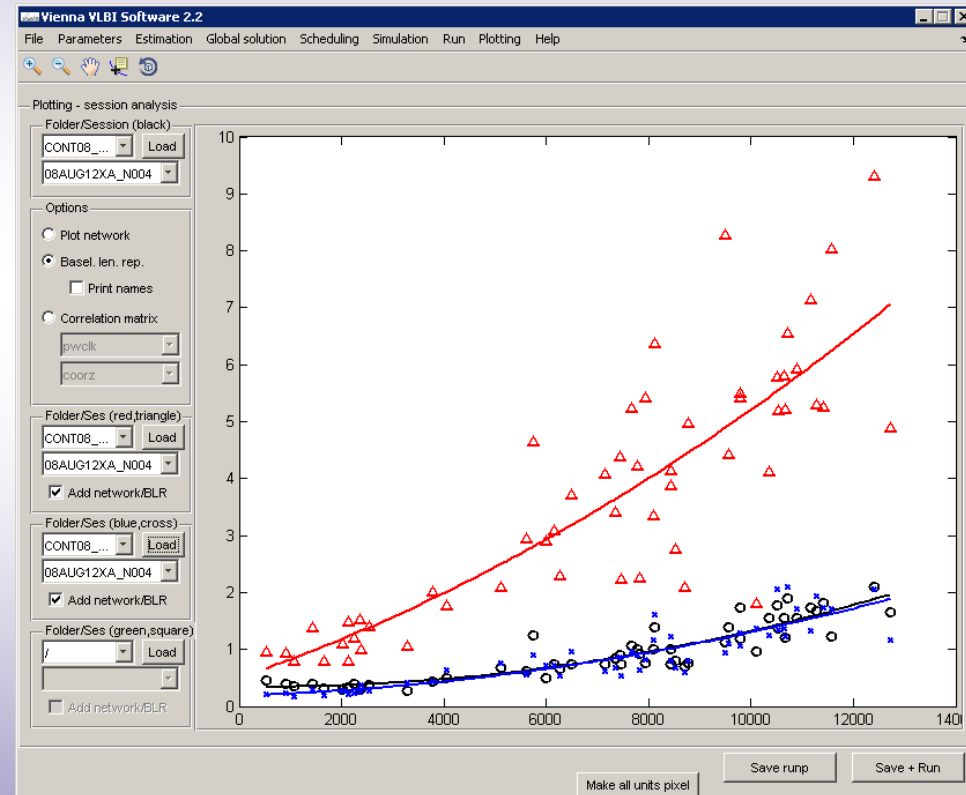
* Up to four sessions






Plot session information

-  Session network*
-  Baseline length repeatabilities*
-  Correlation matrix

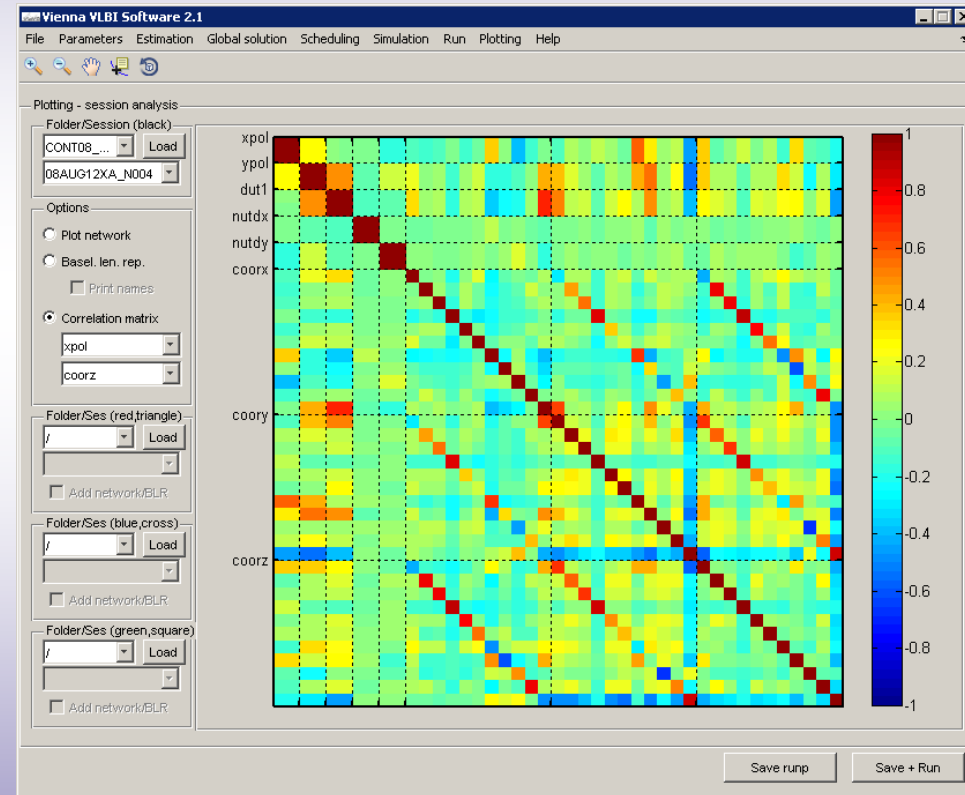
* Up to four sessions



Plot session information

-  Session network*
-  Baseline length repeatabilities*
-  **Correlation matrix**

* Up to four sessions



Save and load GUI state

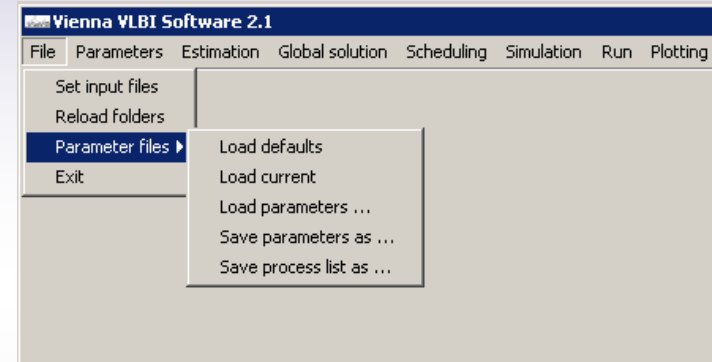
 Get GUI options from a parameter file

→ Same parameterization




 Defaults

 Current – before very latest action

 Save process_list



Program structure

-  `>> views` opens current GUI version (2.1)
-  `>> views('xx')` opens GUI of version x.x
-  `>> views('batch')` runs batch version of views

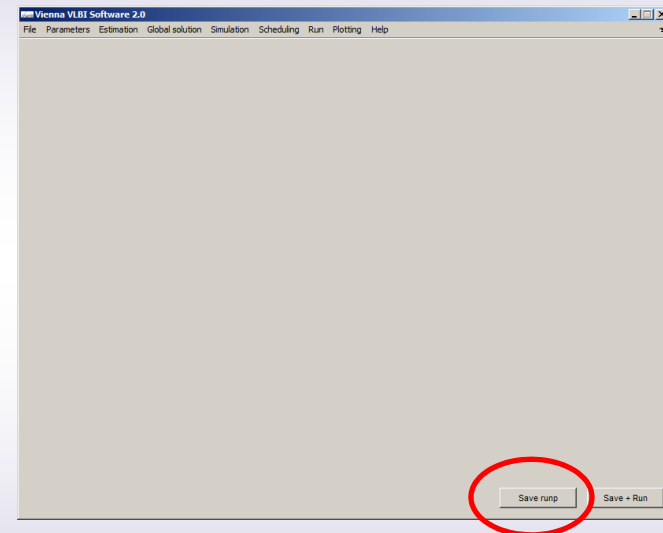
GUI = Prepare processing

Batch = Do processing




vie_setup

→ Save runp („Last user action in GUI“)

- Creates input protocol
- Saves runp.mat
- Saves process_list.mat
- Saves parameter.mat file(s)
- Saves sched, sim and glob parameters






Input protocol

-  input_protocol.txt in /WORK/
-  Saves GUI options (models,...) in textfile
-  For user information (not used in processing!)

```
D:\VieVS\WORK\input_protocol.txt - Notepad++
Datei Bearbeiten Suchen Ansicht Kodierung Sprachen Einstellungen Makro Ausführen TextFX Erweitern
createWorldMapWithGriddedData.bat EOT11a_M2_amplitude.txt input_protocol.txt
1 created [yr mon day h min sec]: 2012 9 4 11 16 51
2
3
4 selected input files and models
5
6
7
8 OPT directory: IGG08R01
9 OUTLIER directory:
10 remove outliers: 0
11
12 a priori TRF file: ../TRF/superstation.mat
13 TRF field (for main station file): vtrf2008
14
15 a priori CRF: ICRF2
16
17 cut-off elevation angle: 0 degree
18 quality code limit: 0
19
20 info about pressure and temperature: ngs
21 info about ionosphere: ngs
22
23 ephemerides: jpl_421
24
25 EOP file: C04_08
26 ocean tides: interpf (Conventions)
27 libration in xpol, ypol: 1
28 libration in UT1: 1
29 EOP interpolation: lagrange
30 tidal UT variations: 1
31
32 precession/nutation model: IAU_2006/2000A
33
34 solid Earth tides: 1
35 tidal ocean loading: 1, FES2004.mat
36 tidal atmosphere loading: 1, s12_cm_noib_leonid.mat
37 non-tidal atmosphere loading: 1, GSFC
38 pole tide: 1, mean pole model: cubic
39 ocean pole tide: 1, mean pole model: cubic
40 hydrology loading: 0, GSFC
41
42 antenna thermal deformation: 1
43 a priori troposphere gradients: zero
44 mapping functions: VM1
45
```

Runp.mat

-  In /WORK/
-  Is overwritten (exists once)
-  Gives:
 - paths (LEVELx subfolders)
 - 1|0 for all modules




```
Command Window
>> load('D:\VieVS\WORK\runp.mat')
>> runp

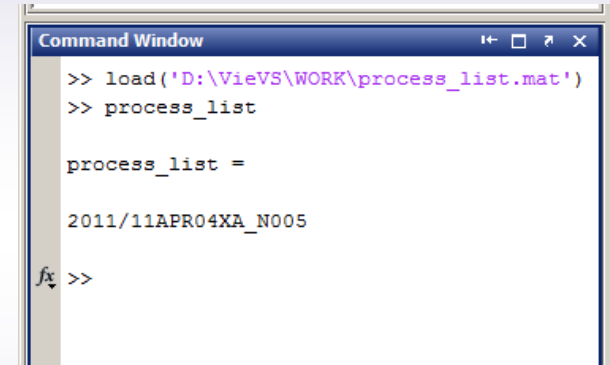
runp =

    init_path: [1x0 char]
    mod_path: [1x0 char]
    lsm_path: [1x0 char]
    sched: 0
    init: 1
    mod: 1
    lsm: 1
    glob: 0

fx >> |
```

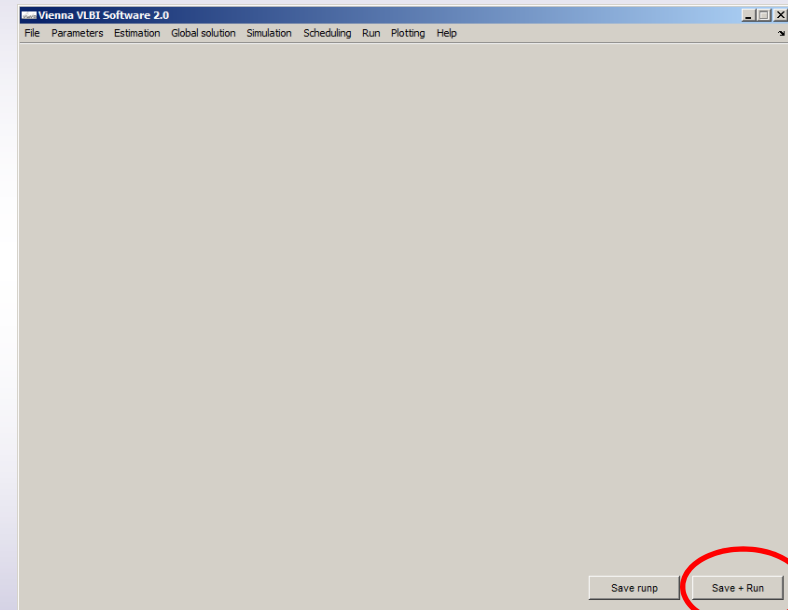
Process_list.mat

-  In /WORK/
-  Is overwritten (exists once)
-  Gives VLBI experiments
(one line = one session)

A screenshot of the MATLAB Command Window showing the execution of a script. The window title is 'Command Window'. The command prompt shows the following sequence: loading a file named 'process_list.mat' from the path 'D:\VieVS\WORK', then executing 'process_list'. The output shows 'process_list =' followed by a single line of data: '2011/11APR04XA_N005'. The prompt returns to 'fx >>'.

Vie_batch (1)

- ♣ Does (batch) processing
- ♣ E.g. `vie_batch2_1.m`
- ♣ Independent from GUI
- ♣ Does processing (`vie_init`, `vie_mod`, `vie_lsm`, ...)



Vie_batch (2)

